

Claims

1. Method for the interactive control of a plastics material injection molding machine, where, via an input unit (10), which is provided with actuating fields, operating parameters necessary for the working sequence of a machine are input, in a form which prompts the operator, into a data processing unit (12) which stores these operating parameters, and subsequently one or more operating sequences are carried out in accordance with the stored operating parameters, wherein a data set covering the basic rules of the working sequence of the machine is recorded in the data processing unit (12) and, by using the data set, as a result, the operator is provided on a surface (16) with visualization of a selected choice of input possibilities, based on the machine configuration and the machine environment, for additional parts of the working sequence that can be added in a compatible manner into the existing parts of the working sequence, wherein for manual input and/or for input by means of a manipulator (38), the input unit (10) makes available to the operator on the surface (16) a selected choice of actuating fields corresponding to the additional parts of the sequence and for navigation on a navigation surface statically arranged on the surface (16), characterized in that the navigation surface (20) comprising at least three lines or three columns of actuating and input fields is hierarchical from line to line or column to column, is represented on the surface (16) with a plurality of navigation levels associated with one another.
2. Method according to one of the previous claims, characterized in that the actuating fields are imaged as input fields (14).
3. Method according to claim 1 or 2, characterized in that the hierarchical navigation surface (20) is represented with three lines.
4. Method according to one of the previous claims, characterized in that a parameter region (22) is represented on the surface (16) for the numeric and/or graphic representation of operating parameters.

5. Method according to one of the previous claims, characterized in that in addition to the navigation levels, a sequence editor (24), which represents the sequence in a schematic manner, is represented on the surface (16).
6. Method according to one of the previous claims, characterized in that when a sequence symbol (26) is tapped, the parameter images associated with the sequence symbol (26) are displayed on the respective navigation level.
7. Method according to one of the previous claims, characterized in that, when three navigation levels are provided, the top navigation levels are represented symbolically in one line, whilst the bottom navigation level is represented completely in the additional lines.
8. Method according to one of the previous claims, characterized in that in the event of an alarm, the symbols (26) of the working sequence relating to the alarm are identified and in that tapping leads to the representation of the relevant parameter region.
9. Method according to one of the previous claims, characterized in that favorite fields (32) are preset or are presetable on the surface (16) by the user and when actuated these lead to a jump, independent of the navigation, to a preset or presetable parameter group.
10. Method according to claim 9, characterized in that when the favorite field (32) is actuated, the parameter image edited last in the associated parameter group is displayed.
11. Method according to one of the previous claims, characterized in that tables (34) are represented on the surface (16) for the input of operating parameters and in that, from these, a preferably non-editable graphic representation of the required values converted therefrom is generated.

12. Method according to one of the previous claims, characterized in that an editable input diagram (36) is represented on the surface (16).
13. Method according to claim 11 or 12, characterized in that the representation of the input of the operating parameters for the various directions of displacement of the axes is effected in the direction of displacement of the axes.
14. Method according to one of the previous claims, characterized in that the method is carried out on a cyclically operating plastics material injection molding machine.
15. Apparatus for the interactive control of a plastics material injection molding machine, having
 - a data processing unit (12),
 - an input unit (10) with fields arranged on a surface (16) for the manual input and/or for the input by means of a manipulator (38), by means of which fields, in a form which prompts the operator, the operating parameters necessary for the operating sequence of the machine can be input into the data processing unit (12) which stores the operating parameters for the subsequent carrying out of one or more operating sequences in accordance with the stored operating parameters, wherein the fields are actuating fields for navigation on a navigation surface statically arranged on the surface (16),
 - a data set recorded in the data processing unit (12) and covering the basic rules of the operating sequence of the machine,
 - using the data set and as a result, a selected choice, offered to the operator displayed on a surface (16), of possible input possibilities, based on the machine configuration and machine environment, for additional parts of the operating sequence that can be added in a compatible manner into the existing parts of the operating sequence,
characterized in that the navigation surface (20) comprises at least three lines or at least three columns of actuating and input fields and is hierarchical from

line to line or column to column and comprises a plurality of navigation levels associated with one another.

16. Apparatus according to claim 15, characterized in that the actuating fields are imaged as input fields (14).
17. Apparatus according to claim 15 or 16, characterized in that the hierarchical navigation surface (20) includes three lines.
18. Apparatus according to one of claims 15 to 17, characterized in that a parameter region (22) is provided on the surface (16) for the numeric and/or graphic representation of the operating parameters.
19. Apparatus according to one of claims 15 to 18, characterized in that in addition to the navigation levels, a sequence editor (24) representing the operating sequence in a schematic manner is provided on the surface (17).
20. Apparatus according to one of claims 15 to 19, characterized in that, when three navigation levels are provided, the symbols for the top navigation levels are provided in one line, whilst the elements of the bottom navigation level where necessary are provided completely in the additional lines.
21. Apparatus according to one of the previous claims 15 to 20, characterized in that identification means are provided for identifying symbols (26) of the operating sequence related to an alarm.
22. Apparatus according to one of claims 15 to 21, characterized in that preset favorite fields (32) or favorite fields (32) that are presettable by the user are provided on the surface (16), said fields being provided as jump keys for a jump independent of the navigation to a preset or presettable parameter group.

23. Apparatus according to claim 22, characterized in that a linking of the jump keys with the parameter image last edited within the associated parameter group is provided.
24. Apparatus according to one of claims 15 to 23, characterized in that a non-editable graphic representation of the required values converted from the input parameters and/or an editable input diagram (36) is provided on the surface (16).
25. Data carriers having a program for the accomplishment of the method according to one of claims 1 to 14.